

CLAIMS

What is claimed is:

- 5 1. A method for creating a test device for testing one or more aspects of a package comprising:
 - providing a test die having a top surface, the top surface having one or more bonding pads or bump pads and one or more conductive paths;
 - connecting a first end of a conductor to at least one of the one or more bonding pads;
 - providing a second end of the conductor to an area external to the package; and
 - enclosing the die in a package, wherein by the die is internal to the package and at least one of the one or more metallic conductors on the top surface of the test die is electrically accessible from the second end of the conductor.
- 15 2. The method of Claim 1, wherein one or more aspects of the package comprise package design, a package material set, or both.
- 20 3. The method of Claim 1, wherein test device is created to undergo HAST testing to test the package.
4. The method of Claim 1, wherein enclosing the test die in the package comprises injecting package material to cover the die.
- 25 5. The method of Claim 1, further comprising soldering the test device onto a printed circuit board.

6. A method for testing a package comprising:
 - providing a test device wherein the test device comprises a test die enclosed within a package configured to provide electrical access the test die;
 - 5 applying one or more signals to the test device; responsive to the one or more signals, obtaining a first data set; subjecting the test device to a package testing procedure; applying one or more signals to the test device, after subjecting the test device to the package testing procedure;
 - 10 responsive to the one or more signals obtaining, a second data set; and comparing the first data set to the second data set.
7. The method of Claim 6, further comprising, responsive to the comparing, determining if the package passed the package testing procedure.
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8. The method of Claim 6, where the test die is a non-functional die configured for package testing.
9. The method of Claim 6, wherein the signal comprises a bias voltage configured to establish opposing electrical polarities on one or more conductors within the package, on the test die, or both.
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10. The method of Claim 6, wherein the test die comprises one or more layers of metal and insulator.

11. A package test device comprising:
 - a test die comprising a non-functional die having a top layer configured for package testing and having two or more pads;
 - a package enclosing the non-functional die;
- 5 two or more contacts external to the package, the two or more contacts configured to provide electrical access to the non-functional die; and
- two or more conductors extending between the two or more contacts and the two or more pads.
- 10 12. The device of Claim 11, wherein the two or more contacts comprise wire leads or solder points.
13. The device of Claim 11, wherein the top layer further comprises one or more conductive traces extending over the top surface.
- 15 14. The device of Claim 11, wherein the top layer further comprises one or more conductive traces extending directly between pads.
15. The device of Claim 11, wherein the conductors comprise wirebonds and the pads 20 are configured to accept a pressure forced bond between a wirebond and the pad.
16. The device of Claim 11, wherein the pad comprises a bonding pad or a bump pad.
17. The device of Claim 11, wherein the test die is electrically connected to the 25 package using a flip chip operation on via two or more solder bumps.
18. The device of Claim 11, wherein the two or conductors comprise wire bonds.

19. A test die comprising a non-functional die for placement in a package for package testing, the test die comprising:

a silicon substrate;

5 at least one insulator layer on the silicon substrate;

a first conductor on or in the at least one insulator layer;

a second conductor on or in the at least one insulator layer;

a first bonding pad electrically connected to the first conductor; and

a second bonding pad electrically connected to the second conductor;

10 wherein the first bonding pad and the second bonding pad are configured to bond with a package conductor to provide for electrical access to the test die after the test die is enclosed in the package, and wherein the at least one insulator layer, the first conductor and the second conductor form a non-functional die.

15 20. The test die of Claim 19, wherein the metallic conductors comprise deposited metallic conductors.

21. The test die of Claim 19, wherein first conductor is electrically isolated from the second conductor.

20 22. The test die of Claim 19, wherein a non-functional die is capable of accepting one or more bias signals or time varying test signals, but not capable of performing processing of the bias signals or test signals.

25 23. The test die of Claim 19, further comprising:

a third bonding pad electrically connected to the first conductor;

a fourth bonding pad electrically connected to the second conductor; wherein a first test signal may pass through the first bonding pad, the first conductor, and the third

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bonding pad and a second test signal may pass through the second bonding pad, the second conductor, and the fourth bonding pad.